

5.11 WETLANDS AND STREAMS

5.11.1 Background

There are two regulatory definitions that apply to the analysis of wetlands and streams at Gary/Chicago International Airport. They are:

Waters of the United States are within the jurisdiction of the Corps of Engineers under the Clean Water Act. *Waters of the United States* is a broad term that includes waters that are used or could be used for interstate commerce. This includes wetlands, ponds, lakes, territorial seas, rivers, tributary streams including any definable intermittent waterways, and some ditches below the Ordinary High Water Mark (OHWM). Also included are manmade waterbodies such as quarries and ponds that are no longer actively being mined or constructed. Wetlands, mudflats, vegetated shallows, riffle and pool complexes, coral reefs, sanctuaries and refuges are considered special aquatic sites that involve more rigorous regulatory permitting requirements.¹ Excluded from Federal jurisdiction under the Clean Water Act as *Waters of the United States* are some waters that are isolated from navigable waterways.²

Wetlands are a category of “waters of the United States” for which a specific identification methodology has been developed. *Wetlands* are those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.³

Three criteria are required for an area to be considered a wetland: hydrophytic vegetation, hydric soils, and wetland hydrology.⁴ The hydrophytic vegetation criterion is satisfied when the dominant vegetation in an area is composed of 50 percent or more species that are specifically adapted to living under waterlogged conditions. Hydric soils are soils that exhibit characteristics indicative of long-term saturated or inundated conditions. Wetland hydrology is present if an area sustains a level of soil saturation or inundation sufficient in duration to result in the dominance of hydrophytic vegetation. In general, an area must meet all three criteria to be classified as a wetland.

5.11.2 Methodology

In 2002, J.F. New & Associates, referred to in this report as the airport’s wetlands consultant, was contracted to perform a wetland delineation of the boundaries of “waters of the United States,”

¹ 33 Code of Federal Regulations (CFR) 328.3. November 13, 1986.

² On January 9, 2001 the Supreme Court in *Solid Waste Agency of Northern Cook County versus USACOE* (SWANCC) handed down a decision that eliminated Federal regulation of some isolated waters (wetlands) under the Clean Water Act (CWA).

³ U.S. Army Corps of Engineers, Department of the Army. *Wetland Delineation Manual*, 1987.

⁴ U.S. Army Corps of Engineers, Department of the Army. *Wetland Delineation Manual*, 1987.

including wetlands, which occur within the proposed runway expansion zone. A report, entitled *Wetland Delineation Report, Proposed Expansion Zone, Gary-Chicago Airport*, October 7, 2002, was prepared. This report identifies the jurisdictional status of the project area based on J.F. New & Associates' best professional understanding and interpretation of the *Corps of Engineers Wetland Delineation Manual* (1987) and Corps of Engineers guidance documents and regulations.

The methodology for delineating wetlands includes gathering of background information research prior to fieldwork. Following the initial research phase, a general reconnaissance of the project area was made to determine site conditions. The site was then walked with the specific intent of determining wetland boundaries. Data stations were established at locations within and near the wetland areas to document soil characteristics, evidence of hydrology and dominant vegetation.

5.11.3 Existing Conditions – 2000

Using various resources, there are a number of wetland areas that have been identified within the study area. In Exhibits 4-16, 4-17, and 4-18, various areas of environmental interest have been identified in the vicinity of the Gary/Chicago International Airport, including several areas that contain known wetlands. There are existing wetland areas within the existing airport property boundaries, identified in the Chapter 4 exhibits as Clark and Pine Dune and Swale and Gary/Chicago International Airport Wetlands. In addition, another area known as the Asphalt Wetland has been identified in the area of the Proposed Action under study. The Asphalt Wetland has extensive physical disturbance resulting in most of the natural topography being destroyed.⁵

As a part of the initial wetland delineation research, several sources of information were consulted to identify potential wetlands and wetland soil units on the site under the existing conditions. These include the U.S. Fish and Wildlife Service's *National Wetland Inventory* (NWI) and the Natural Resources Conservation Service's (NRCS) *Soil Survey* for Lake County, Indiana. The NWI maps were prepared from high altitude photography and in most cases were not field checked. Because of this, wetlands are sometimes erroneously identified, missed, or misidentified. Additionally, the criteria used in identifying these wetlands were different from those currently used by the Corps of Engineers. The county soil maps, on the other hand, were developed from actual field investigations. However, they address only one of the three required wetland criteria and may reflect historical conditions rather than current site conditions. The following summary of the existing conditions is based upon the findings from the background information, prior to the more detailed field investigation process:

⁵ The Nature Conservancy and Ball State University. *Biodiversity Conservation Opportunities in the Toleston Strandplain of Northern Lake County, Indiana: A Strategic Plan for Conservation Success*. 1999.

5.11.3.1 NWI Mapping

The *National Wetland Inventory* map of the area identifies one large wetland complex off the end of the existing primary Runway 12-30 within the Asphalt Wetland. This wetland complex contains three different habitat types. The southern portion of the wetland is described as a seasonally flooded wetland dominated by deciduous hardwood trees. The northern portion of the wetland is described as a seasonally flooded wetland dominated by emergent and shrubby vegetation. A narrow strip located within the northern portion of the wetland is described as a semi-permanently flooded wetland dominated by emergent vegetation or with an unconsolidated bottom.

5.11.3.2 Soil Survey

The NRCS *Soil Survey of Lake County* identifies two soil series within the Asphalt Wetland. These soils are Oakville-Tawas complex (OkB) and Urban land (Ur). Oakville-Tawas complex is listed as a hydric soil. Urban land is land that is significantly disturbed to such a degree that the native soil cannot be classified.

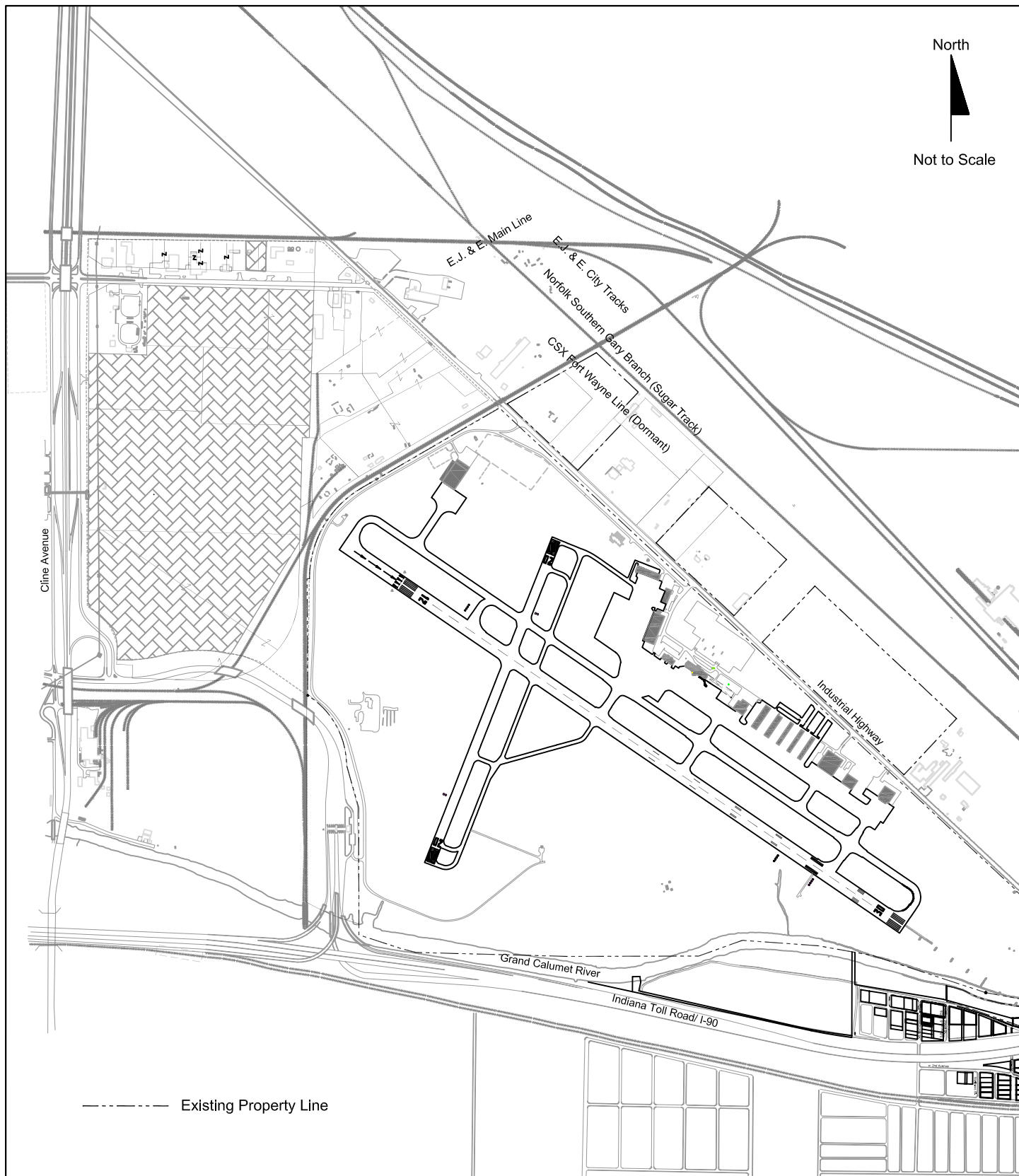
5.11.4 Future Conditions – 2007

Based upon the preliminary wetlands research, the focus of the wetlands analysis for the future conditions was focused upon field investigation of the area off the end of Runway 12-30, known as the Asphalt Wetlands area. **Exhibit 5.11-1** illustrates the portion of the future land acquisition area where permission to enter and conduct field investigations was granted. This area includes the most of the construction limits for the Proposed Action.

The site which was field inspected generally consists of severely disturbed land interspersed with remnant dune and swale habitat. The southernmost and northernmost portions of the site are the most disturbed, while the central portion of the site appears to be disturbed only by sand mining. The disturbed portions of the site contain dumped materials such as residential trash, shingles, concrete, asphalt and tires. The northern portion of the site was disturbed and filled, and is currently a gravel operation. Additionally, large portions of the site contain petroleum in the form of a heavy tar, which was dumped on the site. Many of the areas containing petroleum were not vegetated. Wetlands were spread across the site. The delineated wetlands are shown in **Exhibit 5.11-2**. Wetlands previously delineated on existing airport property are also identified on Exhibit 5.11-2 (Areas 2-5).

North

 Not to Scale



I.D. \Gary\GIS\Exhibits\Chapter 5\Exh 5.11-1.dwg
 : 26-MAR-04, 08:12:10 / ljj
 FILE NAME
 WRD VNT

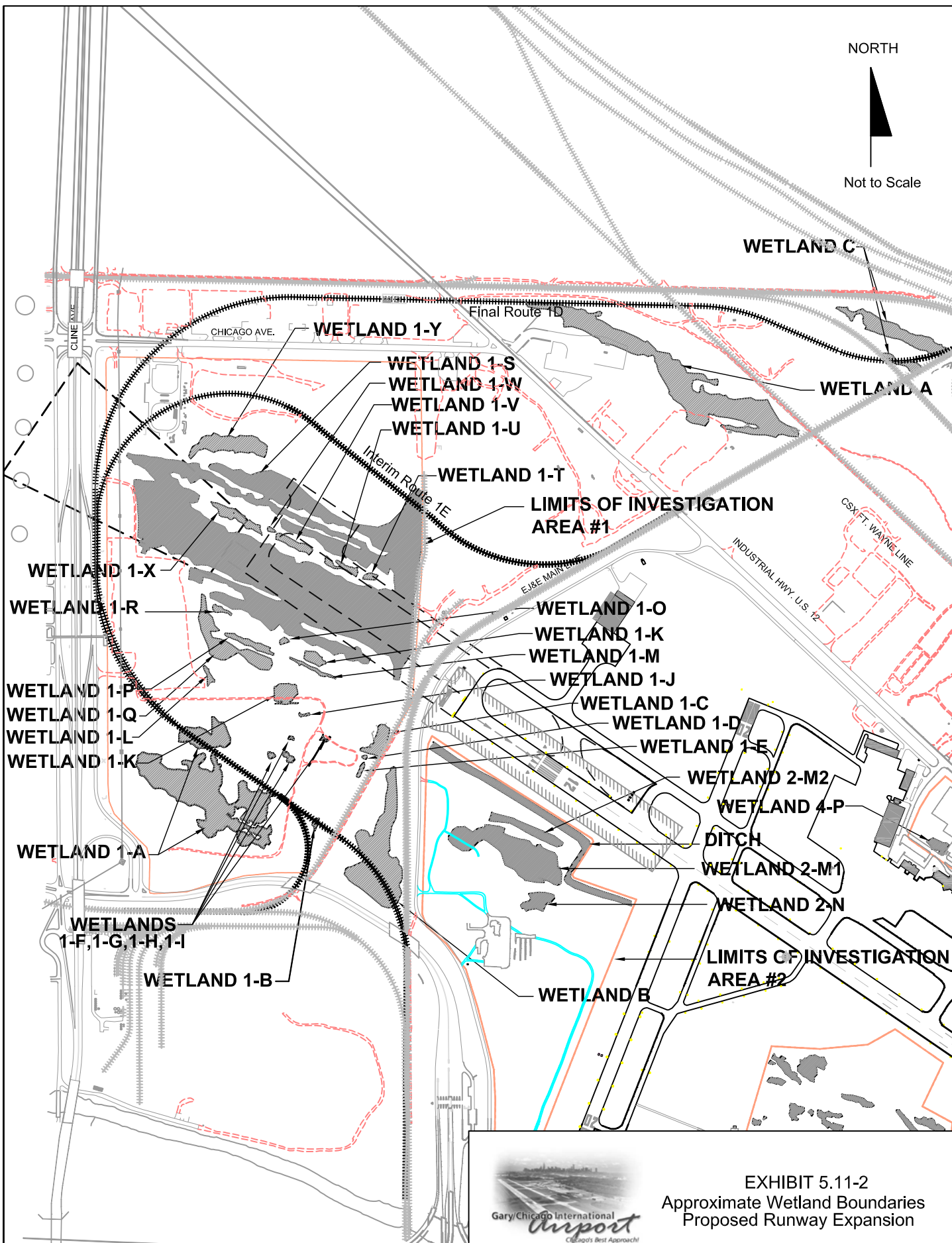


EXHIBIT 5.11-1 Permission Granted for Field Investigation

April 8, 2004

NORTH

Not to Scale



U:\Gary\Map\Wetlands\Chapter 5\Jan 5.11-2.dwg
: 07-Apr-04 08:50:50
FILE NAME
MFD\INT

Source: JF New, 2003



EXHIBIT 5.11-2
Approximate Wetland Boundaries
Proposed Runway Expansion

April 8, 2004

Section 1: Former Oil Refinery and Storage Area

Section 1 represents the majority of the southern third of the Asphalt Wetland and includes wetlands 1A and 1F-1I. Historically, this portion of the site contained an oil refinery. Large amounts of oil waste have been disposed of directly on the ground surface. Consequently large portions of Section 1 are not vegetated due to heavy tar on the soil surface and petroleum saturated soil. Pockets of wetland vegetation are present within this mostly un-vegetated area. Vegetation within these areas ranges from dense to non-existent and is dominated by switchgrass, spikerush and chairmaker's rush. Evidence of wetland hydrology is present such as watermarks on the herbaceous vegetation and driftlines. The soil substrate is severely disturbed and consists mainly of a heavy tar. The surrounding uplands consist of significantly disturbed ground. Piles of concrete, metal debris and tires were found through out this area. A strong chemical odor was noticed in the wetland and upland soil test pits.

Section 2: Disturbed Woodland and Prairie Area

Section 2 is located east and south of Section 1 and includes wetlands 1B-1E and 1J. This section is characterized by historically disturbed land, which now consists of woodland and prairie. Remnants of the dune and swale topography can be found in the southeastern wooded portion of this section. The woodland areas are densely vegetated with cottonwood, black cherry and glossy buckthorn. One small, shrubby wetland area was identified within the woodland area. Dominant vegetation within this wetland includes glossy buckthorn and sedges.

The prairie portion of this section is vegetated mainly with big bluestem, blazing star and tall goldenrod. Three wetland areas were identified within the prairie portion of the site. One wetland is located along the dirt access road in the northeast portion of the section. This wetland is dominated by native species of vegetation such as chairmaker's rush. These wetlands are located in a significantly disturbed portion of the section.

Section 3: Disturbed Dune and Swale Area

Section 3 comprises the northern two-thirds of the site and includes wetlands 1K-1Y. The northernmost portion of the section consists of a gravel handling operation. The remainder of the section consists of remnant dune and swale habitat, which has been altered through the mining of sand and the disposal of oil refinery waste. This section contains the majority of the wetlands found on the site. These wetlands generally fall into two categories: remnants of natural swales or mined dunes and extensively disturbed cattail or common reed vegetated depressions.

The remnants of natural swales and areas where dunes were mined on the site are either dominated by monocultures of cattail, hardstem bulrush and common reed or by native wet prairie vegetation. This native vegetation includes species such as chairmaker's rush, prairie cordgrass, switchgrass, Torrey's rush, grass-leaved goldenrod and spike rush. Wetlands containing mostly native vegetation were also characterized by a sandy soil substrate. Mottling and organic streaking were present in the sand, which are characteristics of hydric soils. The wetlands dominated by cattail, hardstem bulrush

and common reed were characterized by a heavy tar substrate or sandy soil containing significant amounts of petroleum.

The extensively disturbed depressions on the site are vegetated with monocultures of cattails or common reed. The substrate within these wetlands consists of soil mixed with rocky material. The upland portions of this section consisted either of remnant dunes or severely disturbed scrubland. The remnant dunes are vegetated mainly with glossy buckthorn or a community of native prairie vegetation and are slightly higher in elevation than the adjacent wetland swales.

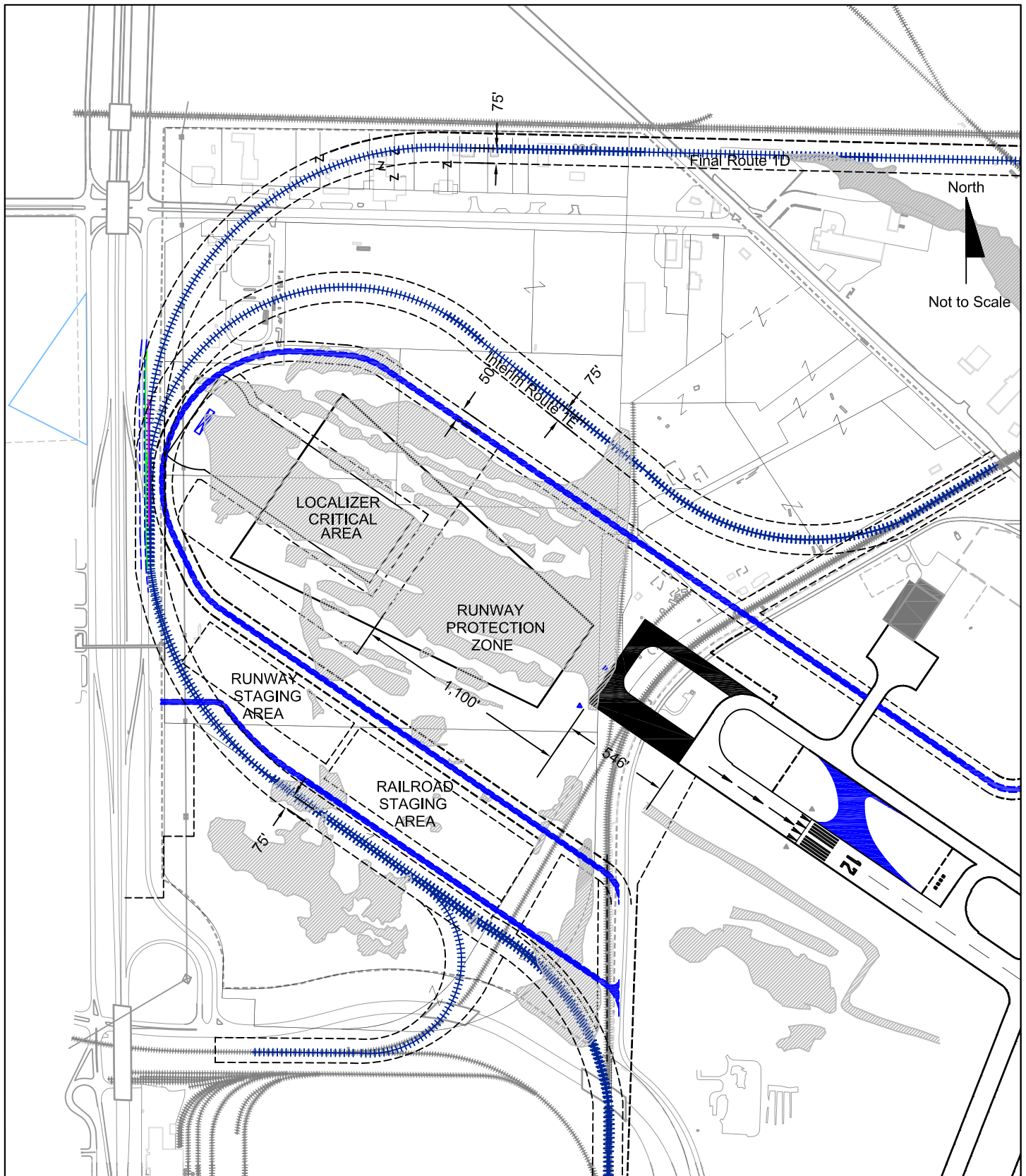
5.11.4.1 No Action

Under the no action alternative, although the wetlands identified in the delineation process will not be disturbed by the airport's Proposed Action, the deterioration of these sites will most likely continue. All of the wetlands in this area have been disturbed by the industrial activities that have historically occurred on this site. In fact, some of the wetlands (approximately 10.8 acres) formed following the demolition of a petroleum storage tank facility and bear no resemblance to the wetlands that were historically present. The remainder of the wetlands has been disturbed to varying degrees by the presence of waste petroleum products on the surface and/or the contamination of surficial groundwater. All have been degraded by the colonization of nonnative species. The degradation as a result of hazardous materials and nonnative species will most likely continue, leaving less and less evidence of the remnant dune and swale wetlands over time.

5.11.4.2 Improvements to Existing Runway 12-30 to Conform with Current FAA Standards

Exhibit 5.11-3 shows the preliminary construction limits for the initial improvements to the existing Runway 12-30 in order to meet the current FAA standards. These construction limits have been superimposed on the wetland delineation study findings. These improvements may occur alone, as a first phase, or simultaneously with the runway extension program described below.

The entire construction limits were not investigated as a part of the 2002 wetland delineation process, primarily due to issues in obtaining access agreements with property owners. Accordingly, the delineation of wetlands was confined to the largest property area where wetlands were expected to be disturbed, since the owner was willing for field investigation to occur prior to the airport's acquisition process on this property. Other areas within the future land acquisition area either were not considered to contain wetlands based upon prior records, aerial mapping or review from public right-of-way, or were not available for access based upon an initial contact of landowners. However approximately 14 additional acres of potential wetlands were identified based on a review of aerial photographs of inaccessible properties (Exhibit 5.11-1; wetlands A, B, and C). Once these areas become accessible, additional wetland delineation work will be



REFERENCES
 FILE NAME : D:\Gary\GIS\Exhibits\Chapter 5\Exh 5.11-3.dwg
 MOD DATE : 07-APR-04, 08:48:58 / JJ



EXHIBIT 5.11-3
Preliminary
Construction Limits
FAA Standards

April 8, 2004

conducted. Of particular interest will be further review and wetland delineation (as appropriate) for the construction limits for the rail relocation.

5.11.4.3 Improvements to Provide Additional Runway Length on Runway 12-30

The proposed improvements to provide additional runway length on Runway 12-30 are to occur simultaneously with and require accomplishment of the improvements for Runway 12-30 to conform to FAA standards (safety area improvements). Fee simple land acquisition for the runway extension will have already been completed to meet the requirements for Runway 12-30 to conform to FAA standards. **Exhibit 5.11-4** shows the preliminary construction limits if the extension of Runway 12-30 occurs as a second phase. Again, these construction limits have been superimposed on the wetland delineation study findings.

5.11.4.4 Expansion of Existing Terminal

A terminal expansion is proposed as a part of the Proposed Action to expand the terminal building and apron area to the maximum size that is possible without a major reconfiguration within the existing terminal area. The terminal expansion area that is under review as a part of the Proposed Action does not have wetlands within it.

5.11.4.5 Acquisition and/or Reservation of Sites for Future Passenger Terminal and Air Cargo Facilities

Two sites have been identified to be acquired and reserved for potential future aviation-related activities, including the development of potential future passenger terminal and new air cargo facilities. The site for the potential new cargo facilities is a remnant parcel from the land acquisition requirements for the runway improvements. The site for the potential future passenger terminal would also consist of remnants of properties to be acquired for the runway improvements. An additional area of approximately 25 acres, under the ownership of 6 landowners, has been identified as needed to complete an area for the potential future passenger terminal facilities to meet long-term needs of the Gary/Chicago International Airport.

North

Not to Scale

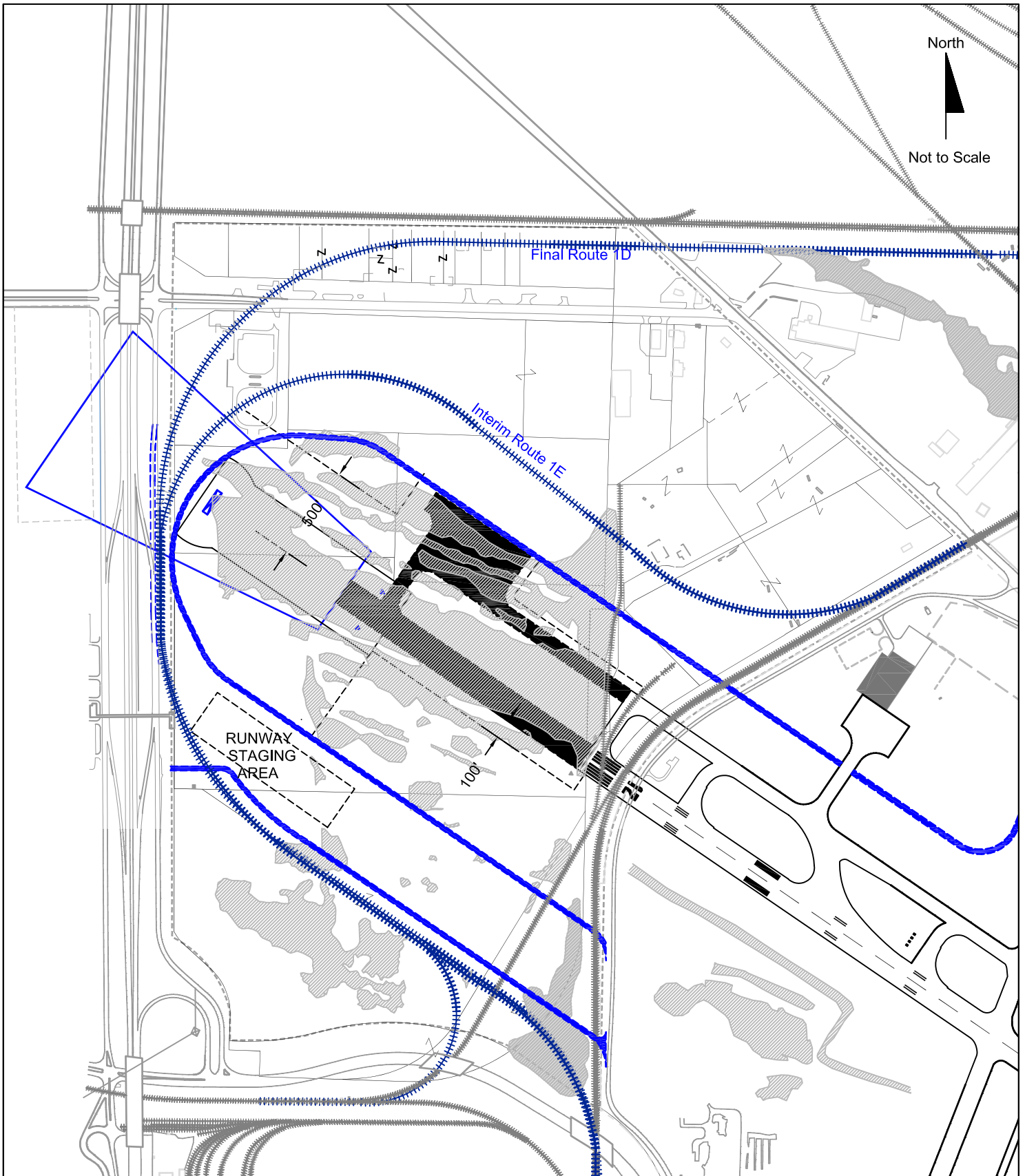


EXHIBIT 5.11-4
Preliminary
Construction Limits
Extended Runway 12-30

April 8, 2004

5.11.5 Summary of Findings

Exhibit 5.11-5 provides a summary table regarding the wetlands findings from the 2002 delineation process summarized above. Approximately 49.03 acres of wetlands were delineated and an additional 14 acres of potential wetlands were identified on the site.

EXHIBIT 5.11-5 Summary of Wetland Area Identified Wetland Delineation October 2002 Gary/Chicago International Airport		
Section	Acreage of Wetlands	Habitat Type
1	7.93 acres	Emergent and scrub shrub
2	0.67 acre	Emergent and scrub shrub
3	49.03 acres	Emergent and scrub shrub
From Aerials	14 acres (approximate)	Emergent and scrub shrub
Total	63.03	
Source: J.F. New & Associates, Inc., 2002.		

5.11.5.1 Regulatory Oversight

The Corps of Engineers has authority over the discharge of fill or dredged material into “waters of the United States.” This includes authority over any filling, mechanical land clearing, or construction activities that occur within the boundaries of any “water of the United States.” A permit must be obtained from the Corps of Engineers before any of these activities occur. In addition, the Indiana Department of Environmental Management (IDEM) is responsible for issuing Clean Water Act Section 401 permits known as Water Quality Certification (WQC) in conjunction with Corps 404 permits. The findings of the 2002 delineation report have been submitted to the Corps of Engineers for verification. The Corps and IDEM will likely require permit approval for any construction activity proposed to occur within wetlands. A preliminary mitigation plan has been identified below in regard to the disturbance of these wetlands. Preparation of wetland permit application materials and submittals to the Corps and IDEM could be carried out concurrently with the preparation of this EIS.

5.11.6 Mitigation

Impacts to wetlands and associated natural resources will require compensatory mitigation to replace the values and functions of the impacted resources. Various mitigation options have been explored assessing open space in the region that provides opportunities for restoration, enhancement or creation of wetland habitats. Three main goals for airport mitigation have guided the development of a concept plan:

1. To allow for viable airport operations through future expansion opportunities.
2. To allow compensatory mitigation to support dune and swale conservation within the Northwest Indiana region.

3. To allow mitigation to support larger conservation and restoration goals consistent with existing regional diversity and corridor plans.

After speaking and meeting with natural resource agencies and local environmental groups it became clear that to obtain the greatest benefit from any wetland mitigation that occurs as a result of this project, mitigation should be carried out to augment and support ongoing restoration work. In addition to speaking with sponsors of various restoration/management efforts currently underway, three documents⁶ were also utilized to identify potential mitigation opportunities and place them in the context of broader initiatives.

A preliminary list of potential mitigation sites in the Northwest Indiana region that are consistent with the above goals was prepared (**Exhibit 5.11-6**). FAA advisory circular 150-5200-33 suggests that wetland mitigation should occur at a distance greater than 10,000 feet from the airport to reduce hazardous wildlife impacts to aircraft. The FAA confirmed this position at a November 10, 2003 meeting. This eliminates the majority of mitigation options.

6 The Nature Conservancy and Ball State University. *Biodiversity Conservation Opportunities in the Toleston Strandplain of Northern Lake County, Indiana: A Strategic Plan for Conservation Success*. 1999.
U.S. Department of the Interior. *Calumet Ecological Park Feasibility Study*. 1998.
Indiana Department of Environmental Management. *Remedial Action Plan Stage II*. International Joint Commission Submittal Document. 1997.



Source: J.F. New and Associates, December 2003

1. 53 Acres of Disturbed Dune and Swale
2. 15 Acres of Disturbed Scrub Woodlands
3. 50 Acres of Disturbed Dune and Swale
4. 75 Acres of Fairly Intact Dune and Swale Habitat (Tolleston Woods)
5. 70 Acres of Good Quality Dune and Swale Habitat
6. Lake Station Mitigation Bank



EXHIBIT 5.11-6 Potential Mitigation Parcels in the Vicinity of the Gary/Chicago Airport Expansion

April 8, 2004

5.11.6.1 Potential Mitigation Ratios

Although mitigation ratios are established by the permitting agencies individually for each application, typical mitigation ratios are well established and may be useful as a guide. For instance mitigation ratios have been established through a Memorandum of Understanding (MOU) between the Indiana Department of Transportation (INDOT), the Indiana Department of Natural Resources (IDNR) and the US Fish and Wildlife Service (USFWS; MOU January 28, 2001). Although the ratios depicted in **Exhibit 5.11-7** are only a guide to what might be required⁷, they provide a relative idea of what ratios might be required for mitigation at the Gary-Chicago International Airport. These ratios are often adjusted based on the quality of the wetland being impacted but are typical.

EXHIBIT 5.11-7 Typical Mitigation Ratios	
Wetland Type	Ratio
Emergent and open water	1:1 to 2:1
Scrub-shrub some immature forested wetlands	2:1 to 3:1
Mature forested wetlands	3:1 to 4:1
Unique or rare wetlands (bogs, fens, etc.)	4:1 and above

Specific mitigation ratios have not been determined by the permitting agencies for this project at this time. Two critical factors will play a key role in this determination. As cited earlier in this section, all of the wetlands have been disturbed by the industrial activities that have historically occurred on this site. Some of the wetlands (approximately 10.8 acres) formed following the demolition of a petroleum storage tank facility and bear no resemblance to the wetlands that were historically present. The remainder of the wetlands has been disturbed to varying degrees by the presence of waste petroleum products on the surface and/or the contamination of surficial groundwater. All have been degraded by the colonization of nonnative species. The second factor is that some of the wetlands do represent remnant dune/swale communities even though they may be seriously degraded. Dune/swale communities are considered “globally imperiled ecosystems” by the USFWS.

5.11.6.2 Potential Impacts

For the purposes of impact assessments in this review, it is assumed that all of the wetlands located in the expansion zone will be impacted by runway and rail line construction and associated development. This could require the permitting of impacts to more than 50 acres of wetlands.

⁷ Mitigation ratio information taken from IDEM's web site; <<http://www.in.gov/idem/planbr/401/401overview.html>>

5.11.6.3 Mitigation Concept

The concept for mitigating the wetlands on the airport is to categorize the impacted wetlands as either remnant dune and swale wetlands or other, non-dune and swale wetlands. While the replacement ratio would most likely be based upon the quality of the disturbed wetlands, the location for the mitigation process would be based upon whether the wetland is remnant dune and swale or not.

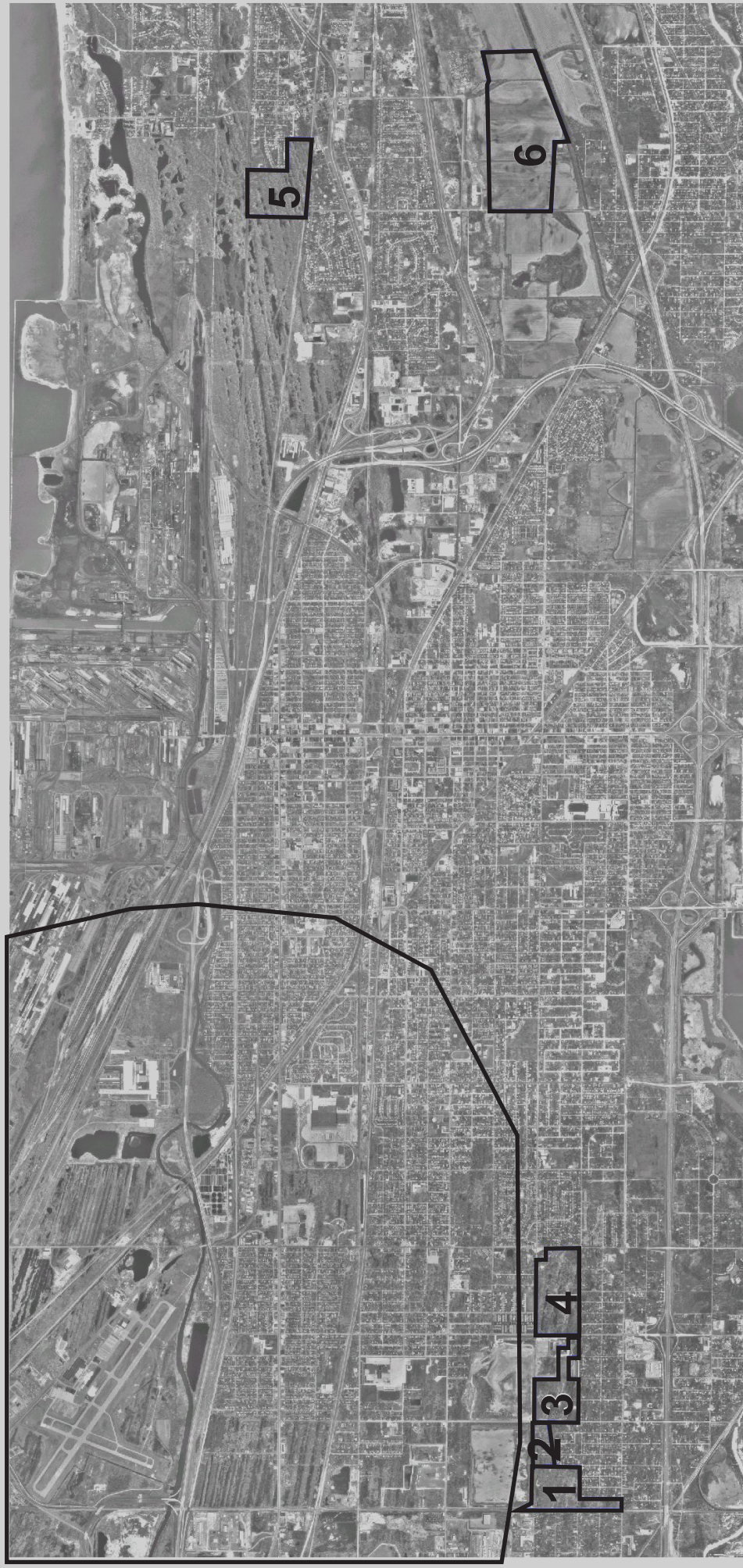
Under the mitigation concept proposed in this section, mitigation for the wetlands at the airport that have significantly lost their dune and swale characteristics should be considered at the Lake Station Mitigation Bank. Though not a dune and swale wetland restoration, the Bank has created approximately 200 acres of contiguous wet prairie and emergent wetland community adjacent to the Little Calumet River.

Other potential restoration areas would be identified with remnant dune and swale habitats to meet the mitigation requirements for disturbed wetlands that have not significantly lost their dune and swale characteristics. Potential mitigation areas for the Gary/Chicago International Airport Proposed Actions have been explored throughout the Northwest Indiana region. Because the FAA requires that mitigation not take place within 10,000 feet of the airport (due to the potential to create new wildlife attractants, which are considered unsafe to an airport operating environment), a substantial number of the potential sites must be excluded. Parcels have been explored beyond the 10,000 linear foot radius suggested by the FAA. All of these parcels contain remnant dune and swale habitats that would involve varying levels of restoration activities. These activities could include trash removal, exotic species control, earthmoving and prescription burning.

The proposed concept for identifying an acceptable mitigation location would be to prioritize and then pursue those areas that meet all of the goals for the mitigation program: available for restoration and preservation as a remnant dune and swale site, acceptable as a location to meet wetland mitigation goals (in terms of quality of wetlands), and meeting the FAA's requirements for a compatible location as it relates to the airport operational safety requirements. In addition, before selecting any mitigation sites historic and hazardous material assessments will be conducted as needed to meet regulatory guidance in determining if there would be any potential significant negative impacts associated with that mitigation location. Also, aesthetics will be considered when designing the mitigation area activities.

5.11.6.4 Remnant Dune and Swale Wetlands

Five potential mitigation sites have been identified that are remnant dune and swale communities and are outside of the 10,000-foot mitigation exclusion zone (**Exhibit 5.11-8**).



Source: J.F. New and Associates, December 2003

1. 53 Acres of Disturbed Dune and Swale
2. 15 Acres of Disturbed Scrub Woodlands
3. 50 Acres of Disturbed Dune and Swale
4. 75 Acres of Fairly Intact Dune and Swale Habitat (Tolleston Woods)
5. 70 Acres of Good Quality Dune and Swale Habitat
6. Lake Station Mitigation Bank

North



Not to Scale



EXHIBIT 5.11-8 Potential Mitigation Parcels Gary/Chicago Airport Expansion

April 8, 2004

Compensatory mitigation for functions and values of impacted dune and swale wetlands could take several forms. Primary of these should be enhancement and preservation of existing habitats. Many of the functions and values that make these habitats unique are progressively lost as the plant community degrades with the lack of fire and invasion by non-native species. Enhancement, management, and preservation of these areas have the capacity to restore these lost functions and values. The physical restoration to a wetland condition of filled swales should also be a part of a final mitigation plan. However, the recreation of swale wetlands in this context has not been widely successful or even attempted. Given this uncertainty, mitigation should focus on restoration, enhancement and preservation of existing remnants rather than creation. Priority should also be given to those remnants that are adjacent to or nearby existing habitats so that they will be less susceptible to extinction events. Smaller, isolated parcels have a much lower ability to be self-sustaining and maintain biodiversity. Alternatively, parcel(s) could be large enough to be able to maintain biodiversity without the benefit of other nearby natural areas.

In developing the final mitigation plan it should also be recognized that swale wetlands could provide only a fraction of their functions and values in isolation of associated dunes. Geologically and biologically dunes and swales are tied together. The mitigation plan should therefore include restoration and enhancement of adjacent dunes. This also provides the potential to enhance habitat for the benefit of Federally endangered Karner blue butterfly. The host plant (wild lupine, *Lupinus perennis*) for this butterfly is only found in open, sunny dune habitats. Lupine, and thus Karner blue butterflies, are excluded from sites that become overgrown with trees, brush and thick vegetation when fire is excluded. Where fire cannot be reintroduced as a management tool to encourage lupines, open conditions can be created by mechanical means such as mowing or brush removal. Limited, seasonal mowing can remove unwanted vegetation while leaving the lupine unharmed.

Potential Mitigation Area 1. This area consists of approximately 53 acres of disturbed dune and swale (Exhibit 5.11-8). The site is bordered on the west by EJ&E Railroad and to the south by 23rd Avenue except for a narrow wooded fringe that extends to 25th Avenue. Fairbanks Avenue is the eastern boundary. The site has suffered along its edges from dumping. Non-native species are common in the woods around the edge of the site and along the narrow fringe to the south.

The potential for dune and swale restoration is fairly high within this area and would involve primarily trash removal and exotic and invasive species control. Implementation of prescription burning should also be considered as a restoration technique.

Potential Mitigation Area 2. This area consists of a narrow patch of disturbed scrub woodlands approximately 15 acres in size (Exhibit 5.11-8). Fairbanks Avenue and Colfax Avenue border the site to the west and east and 23rd Avenue borders to the south. Though some wetlands exist, the remnant of any dune and swale component has been lost due to past earthmoving activities. In

addition, trash has been dumped around the perimeter and disturbance oriented non-native species such as Asian bush honeysuckle (*Lonicera* sp.), common reed (*Phragmites australis*) and Siberian elm (*Ulmus pumila*), dominate portions of the site.

The potential for restoration of dune and swale habitats is not immediately as obvious here because the physical structure has been lost. Mitigation in this area would involve creation of swales and alternating dunes or ridges. The restoration of swales in this area would include excavation to tie the created swales to the existing swales in the two adjoining areas and planting the created swales with hydrophytic species. Restoration of the dunes may involve placing the swale fill adjacent to the created swales to create ridges, in addition to planting the ridges with more characteristic dune species. Potential Mitigation Area 2 may be key in maintaining connectivity between the two adjacent remnant dune and swale areas (1 and 3).

Potential Mitigation Area 3. This area consists of approximately 50 acres of disturbed dune and swale south of an old landfill (Exhibit 5.11-8). This area is largely a square tract in the northeast corner of Colfax and 23rd Avenue that could potentially be expanded to include a narrow connection eastward to Area 4. Residences border the west and southern boundaries and trash has been dumped primarily around these edges of the site. Disturbance oriented plant species such as box elder (*Acer negundo*), and mulberry, and exotic species such as bush honeysuckle, common reed, creeping Charlie (*Glechoma hederacea*), purple loosestrife (*Lythrum salicaria*), reed canary grass (*Phalaris arundinacea*), cattails (*Typha* sp.), smooth arrow-wood (*Viburnum recognitum*) and Siberian elm are dominant especially around the perimeter of the site and to the east end of Potential Mitigation Area 3. A ditch has been dug along Colfax and the spoils placed within the site edge. An auto salvage dealer borders the northwestern part of the site (between the landfill and the site) and may have infringed on the site boundaries.

The site has a fairly high potential for dune and swale restoration, especially the contiguous square portion of the site. Remnant ridges and depressions are apparent, and no obvious earth moving has occurred within the interior of the site. Characteristic dune species include black oak, white oak (*Quercus alba*), witch hazel (*Hamamelis virginianus*), Pennsylvania sedge (*Carex pensylvanica*), and bracken fern (*Pteridium aquilinum*). Characteristic swale species include royal fern (*Osmunda regalis*), button bush (*Cephalanthus occidentalis*) and silky dogwood (*Cornus obliqua*). Restoration activities would include primarily trash removal and exotic species control. Implementation of prescription burning should also be considered.

Potential Mitigation Area 4. This area consists of approximately 75 acres of fairly intact dune and swale habitat known as Tolleston Woods. IDEM has identified this parcel as critical habitat. It is located between 21st and 23rd Avenue to the north and south and between Burr and Clark Street to the west and east (Exhibit 5.11-8). Trash has been dumped along the perimeter of the site and all-terrain vehicle use has also caused some damage. Exotic species such as bush honeysuckle,

loosestrife and common reed are dominant primarily along the boundary but are found throughout the site. Along the northern boundary there are what appear to be old road cuts that were cleared into the property but have re-vegetated for the most part. An old building foundation is present along the western property boundary. The southeast portion of the site is fairly disturbed from past land clearing and leveling. Plant species re-vegetating this area include disturbance oriented exotic species and fill material and foundations are present in some areas. This portion of the site could be excluded or used to create new swale wetland should that be necessary.

This site has a very high potential for dune and swale restoration, and may be one of the largest high quality dune and swale remnants beyond the 10,000-foot radius from the airport that is not already protected. Potential Mitigation Areas 3, 2 and 1 also connect to create a greater corridor with Potential Mitigation Area 4 but are much more disturbed. Characteristic dune and swale species are present throughout the site. Restoration activities would include primarily trash removal, prescription burning and exotic species control and potentially some wetland creation.

Potential Mitigation Area 5. This area consists of approximately 70 acres of good quality dune and swale habitat (Exhibit 5.11-8). It is bounded to the west by high quality dune and swale habitat of the Indiana Dunes National Lakeshore (NPS). The adjacency of this parcel to the National Lakeshore increases its value in preserving biodiversity. Wild lupine, the host plant for the larvae for the Federally endangered Karner blue butterfly is found throughout the site. The site is largely physically undisturbed and appears to burn regularly due to sparks from the adjacent rail line and arson. Exotic species common throughout this region are present within the site although in low numbers due to the limited disturbance and frequent fires.

The long-term protection of this parcel in its current state would meet important habitat diversity goals. Restoration of dune and swale habitat within this area would not involve an extensive amount of work as compared to the other areas due to the good current condition. Restoration activities would likely include exotic species control and minor amounts of trash removal.

5.11.6.5 Non Dune and Swale Wetlands

The approximately 10.8 acres of non dune and swale wetland within the expansion area do not support the functional characteristics of dune and swale communities and have, for the most part, become established on unnatural terrain that resulted from the construction and subsequent dismantling of the petroleum storage tank facility. In many cases the substrate is so compromised by petroleum wastes and chemical products that little to no vegetation can survive.

Potential Mitigation Area 6. Should compensatory mitigation be required for these wetlands, credits could potentially be purchased from the Lake Station Mitigation Bank (shown as Area 6 in Exhibit 5.11-8). This mitigation bank has been approved to sell credits for impacts to wetlands in

the Little and Grand Calumet River watershed though approval must be gained from IDEM and the Corps of Engineers on a case-by-case basis. The bank's charter specifically states that the bank may not be used to mitigate for dune and swale wetlands. Purchase of credits at a wetland mitigation bank would free the airport from any further obligation or liability.